CIP White Paper

Department Name: _____SPU – Water Fund_____

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Section 1 - Overview

SPU delivers an average of 120-130 million gallons of drinking water per day to more than 1.3 million people and businesses in Seattle and 22 surrounding cities and water districts. The water system infrastructure includes the Cedar and South Fork Tolt supply sources, two wellfields, two primary water treatment plants, 11 booster chlorination facilities, 400 million gallons of treated water storage, 30 pump stations, approximately 1,900 miles of transmission and distribution system pipelines, over 188,000 meters and service connections, more than 21,000 distribution system valves, about 18,000 hydrants, monitoring and control systems, various buildings and other related facilities. The capital program also includes investments in watershed stewardship projects, Cedar River Watershed Habitat Conservation Plan implementation, water conservation programs, vehicles, heavy equipment, and technology.

Planned spending in the Water CIP is $379.7 million over the next six years. This includes covering open reservoirs to ensure water purity as required by state regulations; the Morse Lake Pump Plant, which will increase access to water stored in Morse Lake and help the utility respond to drought situations; water system improvements associated with construction projects in the City's streets, highways, and bridges; and investments in the Cedar River watershed mandated by the federal government as embodied in the Habitat Conservation Plan. The Proposed CIP also includes many ongoing programs, such as improving the distribution system of water mains, valves, and pump stations. By the time the Morse Lake Pump Plant project has been built in 2017, however, investments in major generational assets will have been completed, and the overall CIP will be reduced. Spending will be substantially focused on maintaining, rehabilitating and replacing infrastructure for delivery of clean drinking water, with continued watershed stewardship.

Funding for Water capital projects comes predominantly from water rates charged to retail and wholesale customers in the region. In the spring of 2011, the Executive proposed new rates for the period 2012 to 2014, which the Council will review and adopt by the fall of 2011. SPU is currently drafting the update of its Water System Plan, a Washington Department of Health regulatory requirement due every six years. It will be finalized and approved by the Washington Department of Health by April 2013.

Section 2 - Summary of Upcoming Budget Issues and Challenges

Three important trends have converged to put financial pressure on the Water Utility and shape this proposed CIP.

The first is conservation. The City of Seattle and Seattle residents have worked together to reduce water consumption. As a result, water consumption has declined roughly every year since 1990 and in 2010 was 33% below 1990 levels, despite serving a larger population, and is projected to further decline. Seattle currently has some of the lowest per capita water consumption in the nation. While this accomplishment helps contribute to a sustainable future for the region, it puts financial pressure on the

utility because fixed costs including the costs of the CIP need to be distributed across fewer units of water sold. This trend also puts pressure on SPU management and employees to deliver services as efficiently as possible. In 2010 and 2011, unusually cool and wet summer weather further depressed water sales.

The second major trend shaping the 2012-2017 CIP is recent economic history. Since water rates were last adopted in 2008, the slowdown in the economy has adversely impacted both water demand and new development. Revenues in the Water Fund were a cumulative $56.5 million lower between 2009 and 2011 than forecast in the last rate study. To respond to this changing economic climate, SPU unfunded 85 FTE across the department in 2010 and 2011, reduced programmatic spending and deferred capital investments, and identified operational efficiencies leading to savings in overtime, fleets and other central costs. As a result, the Executive's 2012-2014 rate study proposes capital and operating expenditures for 2012 that are lower than amounts assumed for 2011 in the 2009-2011 rate study.

The third trend is the recent history of major infrastructure investments. The Water CIP is transitioning from a period of constructing large capital projects responding to regulatory requirements to a period focused on the maintenance of physical infrastructure. The investments include water treatment facilities on the Tolt and Cedar River sources, coverings for five open reservoirs in response to state regulations, and investments to meet federal requirements embodied in the Cedar River Watershed Habitat Conservation Program. These investments helped secure the supply and distribution of pure drinking water and provide appropriate stewardship of the watersheds consistent with federal and state requirements. The City of Seattle is now better positioned than many water utilities in the nation in terms of regulatory compliance, and residents and rate payers will benefit from these investments for years to come. The financial implications of the major generational investments will likewise continue to be felt for several budget cycles, as the utility pays off the bonds that were issued to finance the investments.

Against the backdrop of these trends, the 2012-2017 Water CIP has been developed to:

- maintain the transmission and distribution systems, including stewardship of the watersheds, to ensure a reliable source of high-quality drinking water,
- comply with federal and state regulations governing water quality, system reliability, and habitat protection in the watersheds in which SPU operates, and
- prioritize projects to deliver on infrastructure and regulatory requirements within the limited resources of the Water Fund.

Please see section 8 for more information about projects in the 2012-2017 Water CIP.

Section 3 - Thematic Priorities

The overarching goal of the Water CIP is to ensure that the water system is properly upgraded and expanded to reliably deliver high-quality, safe drinking water to customers, protect the environment, and comply with regulations. The primary themes driving the CIP in the next 6 years are asset preservation, health and human safety, environmental sustainability and race and social justice.

SPU is committed to making **asset preservation** investments to create or enhance operational efficiency. SPU uses asset management principles to determine the timing of rehabilitation or replacement of its

infrastructure. Projects that fall into this category vary, ranging from water main replacement related to transportation projects to decommissioning of steel storage facilities.

SPU's commitment to **health and human safety** is also addressed through SPU's reservoir covering projects. Consistent with Ordinance 120899, and required by state regulators, Seattle Public Utilities (SPU) is replacing its open finished drinking water reservoirs with underground structures that will improve water quality and system security. In 1990, there were ten uncovered distribution system reservoirs. As of 2010, there were two remaining open reservoirs in service, and one under construction. The construction of Maple Leaf Reservoir's replacement began in 2009 and is scheduled to end in mid 2012. SPU plans to decommission Roosevelt Reservoir, and further evaluate the possibility of decommissioning Volunteer Reservoir; however, permanent actions at these two reservoirs are not expected to occur until after Maple Leaf Reservoir is completed and the City has had an opportunity to take the Volunteer and Roosevelt reservoirs offline for a period of time to observe the water system's performance without them.

SPU is committed to **environmental sustainability**. This can best be seen in SPU's responsibilities as outlined in the 50-year Habitat Conservation Plan, an agreement between local, state and federal agencies which seeks to ensure the long-term ecological integrity of the Cedar River Watershed, which supplies the majority of the City's drinking water, while simultaneously addressing the needs of protected wildlife species in and along the Cedar River. Investments in the regional conservation and low-income conservation programs also help in management of our natural resources, while helping customers reduce their utility bills.

SPU is also committed to **race and social justice**. One example of this commitment is the Low Income Water Conservation Program: This ongoing program provides water use efficiency resources to the City's low-income customers to implement water conservation measures. Typical improvements consist of, but are not limited to, installing water-efficient fixtures, such as aerating showerheads and faucets, low water-use toilets and efficient clothes washers. The program is cooperatively managed by SPU and the City's Human Services Department.

Section 4 - Project Selection Criteria

SPU's capital planners identify candidate CIP projects through an awareness of ongoing planning processes (e.g., comprehensive plans, program plans), external projects and opportunities, and emergencies or other unexpected events that indicate specific investments are possibly recommended. SPU's Asset Management system then provides rigorous analysis of projects, by using a business case process that establishes whether a problem or opportunity is timely and important, and that the proposed solution is superior to alternatives based on a triple bottom line analysis (economic, environmental and social) of life cycle costs and benefits – or is a "must do" project (e.g., required by regulation).

After candidate projects have been identified, SPU prioritizes projects for inclusion in the CIP based on the following set of criteria:

- Regulatory Mandates, Legal Agreements: The degree to which the project is driven by federal, state, and local laws, permit and regulatory requirements, and consent decrees; as well as by legal agreements with public and private parties. Examples of highly ranked projects in this category include the Reservoir Covering programs and the Habitat Conservation Program.

- External Drivers: SPU's responsiveness to, or engagement with, the projects of other city departments or public jurisdictions, and the specific mandates of the City Council and Mayor. Examples of highly ranked projects in this category include utility relocation and betterments associated with the Alaskan Way Viaduct and Mercer Corridor projects.

- Infrastructure: How a project addresses infrastructure conditions or vulnerabilities. Examples of highly ranked projects in this category include the Watermain Rehabilitation, Distribution System Improvements and Tank Improvements programs.

- Level of Service: The importance of this project in providing or improving services to customers. Examples of highly ranked projects in this category include the Water Infrastructure – New Taps and Service Renewals programs.

- Other Factors: Other important factors, such as whether a project has social or environmental benefits not otherwise captured; is already in progress or near completion; represents a limited time opportunity; has community visibility, or has outside funding.

Every project is rated against each criterion; criteria ratings are then considered in determining an overall project priority ranking, using expert judgment. Priority rankings for the CIP are determined by the leads for each Line of Business, with review by key internal stakeholders. The ranking scheme and criteria are the same for all Lines of Business, and are approved by the SPU Director and Asset Management Committee.

Project priority rankings are used to clarify and document which projects are most important and why, to help determine which projects will be included, excluded or deferred from the CIP, and which projects should receive priority attention if a staff or financial resource constraint should arise. This process can also result in project scope changes, as more cost-effective approaches to meeting the business need are identified.

In recent years, this prioritization process has resulted in decisions to retire or downsize some facilities, primarily finished water reservoirs, and defer some capital projects. Retiring facilities reduces capital expenditures since these facilities are in need of major improvements (such as seismic retrofits) that are avoided, as well as reduces annual operating costs since the level of maintenance is greatly reduced. Downsizing or retiring storage facilities is possible because the need for storage has changed over time as the system has been reconfigured, transmission and treatment has become more reliable, and demands, particularly for fire flows, have declined.

Some examples of retirements are:

- Richmond Highlands Tanks (decommissioning the smaller of two): $1.8 million in capital cost savings.
- Foy Standpipe: $2 million in capital cost savings.
- Myrtle Tank #1: $900,000 in capital cost savings.
- Roosevelt Reservoir: $24 million in capital cost savings.

- Volunteer Reservoir retirement is under consideration ($25 million in capital saving since this reservoir would have to be buried if it were kept in service).
- Lincoln, Beacon and West Seattle Reservoirs were downsized, based on demand analysis that showed that the replacement reservoirs constructed as part of the reservoir covering project could be sized somewhat smaller, to be more cost effective, and still meet all water standards and demand projections for many decades into the future.

Some examples of deferrals are:

- Landsburg Flood Passage Improvements to improve woody debris management and performance during high flood flows at Landsburg Diversion ($5 million): Moved to 2013 and scope downsized.
- Cedar Falls Facilities Development to improve buildings and office space at Cedar Falls Headquarters: Shifted start of planning from 2009 to 2011. Construction shifted from 2012 to 2014.
- Desktop and laptop replacement frequency lengthened.

Section 5 - Aligning Infrastructure with Planned Growth

In its Water System Plan updates, SPU forecasts water demands to meet the growth projections as planned for in Seattle's most recent Comprehensive Plan and ensures that there will be adequate water supply for at least the next 20 years. These growth projections include expected residential and commercial growth into designated Urban Centers and Urban Villages. The 2007 Water System Plan indicated that new sources of supply would not be needed until sometime after 2060.

Growth-based infrastructure needs in Urban Centers and Urban Villages are addressed through specific programs in the Water CIP, including water main extensions, new water connections for new construction, fire flow improvements, and water main rehabilitations. The water distribution system in these areas is fairly robust, and needed improvements are generally located within areas where the land use is changed from single family zoning to a more intensive use needing higher flows for firefighting. Projects containing these improvements are evaluated through a business case process and are prioritized among the other projects in the CIP.

Section 6 - Future Projects/What is on the Horizon

The 2012-2017 time period will substantially close out the era of major projects in the Water Fund, including covering or decommissioning of the remaining three open reservoirs and completing a new sockeye salmon fish hatchery, which is a requirement of the Cedar River Habitat Conservation Plan.

The 2012-2017 CIP includes only one remaining large project, the Morse Lake Pump Plant, and a few special mid-range programs, such as utility relocations and betterments necessitated by transportation projects, and improvements to SPU facilities. The Morse Lake Pump Plant project enables the Utility to reliably release water from Morse Lake into the Cedar River to maintain the supply of drinking water to the region and meet regulatory minimums for the amount of "instream flows" in the Cedar River to support aquatic habitat, wetlands, riparian vegetation, and water quality. Beyond these projects, emphasis is on asset management-based rehabilitation and replacement of distribution system infrastructure, including mains, valves, hydrants, and meters.

In the years outside of the 2012-2017 planning horizon, the overall CIP is anticipated to trend downwards, and investments will be focused on maintaining the physical infrastructure for distribution and transmission of clean drinking water, with continued watershed stewardship. Please see section 8 for more information about projects in the 2012-2017 Water CIP.

Section 7 - CIP Revenue Sources

SPU's Water CIP is funded largely by Water ratepayers. About 70% of the Water Fund's overall revenues come from retail ratepayers, split approximately evenly between residential and commercial customers. Another 23% of the Water Fund's overall revenues come from wholesale purveyors who serve surrounding jurisdictions. SPU issues bonds, serviced by ratepayers, covering between 80-85% of the CIP, with the remainder funded by cash, i.e. directly by ratepayer revenue. SPU actively seeks grants, low interest loans, and other funding sources whenever possible. SPU also receives payments from developers that are intended to offset the cost of installing new taps when they connect newly constructed buildings to the SPU water mains. These "tap fees" are a volatile revenue source, trending with the construction-related sectors of the economy.

Section 8 - CIP Spending by Major Category

CIP Spending by Major Category – 2012-2017 Proposed CIP
(Amounts are in thousands of dollars. Totals may not add due to rounding.)

Water Fund	2012	2013	2014	2015	2016	2017	Total
Distribution	$ 15,194	$ 19,778	$ 20,394	$ 22,751	$ 24,085	$ 25,279	$ 127,481
Transmission	$ 1,343	$ 3,027	$ 3,076	$ 3,137	$ 3,195	$ 3,393	$ 17,172
Watershed Stewardship	$ 1,828	$ 1,035	$ 729	$ 600	$ 600	$ 600	$ 5,392
Water Quality and Treatment	$ 6,613	$ 5,293	$ 1,547	$ 202	$ 210	$ 113	$ 13,978
Water Resources	$ 5,617	$ 5,576	$ 8,743	$ 8,741	$ 12,223	$ 10,301	$ 51,201
Habitat Conservation Program	$ 4,913	$ 3,372	$ 3,649	$ 2,945	$ 2,489	$ 1,809	$ 19,176
Shared Cost Projects	$ 14,641	$ 18,164	$ 17,696	$ 17,590	$ 16,643	$ 20,472	$ 105,205
Technology	$ 5,358	$ 7,709	$ 8,685	$ 6,456	$ 5,916	$ 5,999	$ 40,123
Total	**$ 55,506**	**$ 63,954**	**$ 64,519**	**$ 62,421**	**$ 65,360**	**$ 67,965**	**$ 379,725**

Distribution: Projects and programs in this program category relate to rehabilitation and improvements to the City's water mains and appurtenances, pump stations, and other facilities that are part of the system that distributes treated water throughout the City of Seattle to retail customers.

Reductions in the **Distribution BCL** of $5.6 million in 2012 and $1.8 million in 2013 compared to the same years in the Adopted 2011-2016 CIP reflect the continued slowdown in real estate development, which has resulted in decreased demand for new taps. While this BCL will be the focus of many asset management investments by the Water Fund in the coming years, it is also part of the larger

reprioritization of the CIP to maximize accomplishments within the Fund's financial limitations during the current economic conditions. Thus, many projects in this BCL have been deferred until later years, leading to reductions when compared to Endorsed Budget amounts.

Transmission: The purpose of this program category is to rehabilitate and improve the City's large transmission pipelines that bring untreated water to the treatment facilities, and convey water from the treatment facilities to Seattle and to other local utilities that purchase a portion of SPU's supply for their customers. After the completion of the second Tolt Pipeline and repairs to the first Tolt Pipeline, this category of CIP expenditures has fallen sharply.

Reductions in the **Transmission BCL** of $1.7 million in 2012 compared to the same year in the Adopted 2011-2016 CIP were due primarily to a shift in the timing of the Business Case presentation for the Cathodic Protection program to late 2011, which has affected the expected construction start date for that project.

Watershed Stewardship: Projects and programs in this program category improve protection of the City's sources of drinking water, provide habitat protection and restoration, sustain the environment, and enhance environmental quality, both locally and regionally. Most of the projects in this program category are located within the Cedar and Tolt River municipal watersheds.

The Cedar River Municipal Watershed is 90,638 acres of land owned by the City of Seattle and provides about 70% of the drinking water used by over 1.3 million people in the greater Seattle area. The City of Seattle is required by law to maintain a clean drinking water supply. To that end the City restricts public access and management is guided by a Habitat Conservation Plan. The Cedar River Watershed is an unfiltered surface water supply which produces some of the highest quality drinking water in the world.

The South Fork Tolt River Watershed is the smaller and lesser known but still essential second supply watershed in SPU's freshwater supply system. Located in the foothills of the Cascades in east King County, it first came on-line in 1964, and since 1989 has also supported a small Seattle City Light hydro-electric facility. The South Fork Tolt River Watershed can provide up to 100 million gallons of drinking water per day.

Increases of $931,000 in 2012 and $149,000 in 2013 in the **Watershed Stewardship BCL,** compared to the same years in the Adopted 2011-2016 CIP, occurred because all bridge projects in this BCL were previously removed pending Business Case approval within SPU. The Business Case has now been approved and a number of bridge projects are moving ahead. In addition, the 2012-2017 CIP proposes a new project to fund drainage and vegetation improvements along water transmission rights of way and in the Lake Youngs Reserve. This new project will improve water quality and reduce long term maintenance costs.

Water Quality & Treatment: The purpose of this program category is to construct, rehabilitate or improve water treatment facilities, and cover the remaining open water reservoirs. State and federal drinking water regulations and public health protection are key drivers of investments in this program category. To comply with regulations, SPU has invested hundreds of millions of dollars in building two new treatment facilities and burying five reservoirs that contain already treated water that is distributed directly to Seattle residents for drinking purposes.

Consistent with the approach of closing out major CIP projects in the near term, there is a proposed reduction of $1.5 million in the **Water Quality & Treatment BCL** for 2012 compared to the same year in the Adopted 2011-2016 CIP. An increase of $3.1 million in 2013 is due to a placeholder for any actions that may be needed to address structural needs for the reservoirs that have been identified and are being evaluated during 2011-2012.

Water Resources: The purpose of this program category is to manage water resources to meet anticipated demands at the supply-reliability standard and instream flow requirement, and to promote residential and commercial water conservation. Examples of the types of projects in this category include the Dam Safety Program and the Morse Lake Pump Plant. The Morse Lake Pump Plant is one of the last big investments contemplated in the Water CIP in this decade.

The **Water Resources BCL** is $847,000 higher in 2012 than was anticipated in the Adopted 2011-2016 CIP, in part because Council removed the Morse Lake Pump Plant project from the 2011-2016 CIP pending a final determination on project design. That decision has now been made, and the project is therefore included in the 2012-2017 CIP.

Habitat Conservation Program: This program category includes projects and programs directly related to implementation of the Cedar River Watershed Habitat Conservation Plan. The Habitat Conservation Plan benefits the utility and the ratepayers it serves by providing legal certainty under the Endangered Species Act for the City's continued operations within the Cedar River Watershed, which supplies 70% of the region's drinking water. The Habitat Conservation Program requires SPU to invest $100 million over 50 years, with $60 million in the first decade, on approximately 30 capital projects and 60 Operations and Maintenance (O&M) activities in three areas: management of instream flows for people and fish, forest and land conservation activities, and mitigation for the blockage of salmon and steelhead fish as they return to the Cedar River to spawn. The Water CIP projects in this area are grouped into eight categories: road improvements and decommissioning, stream and riparian restoration, upland forest restoration, Landsburg fish passage, Cedar River sockeye hatchery, improvements to the Ballard Locks for fish passage and water conservation, fish habitat protection and restoration in the lower Cedar River below the municipal watershed boundary, and evaluation of Cedar permanent dead storage in Chester Morse Lake.

While the size of the **Habitat Conservation Program BCL** decreases over the course of the six-year CIP, an increase of $676,000 in 2012, compared to the same year in the Adopted 2011-2016 CIP, appears largely because some costs in the Downstream Fish Habitat protection program are being pushed from 2011 into 2012 due to limited land acquisition opportunities in 2011. A decrease of $782,000 in 2013 was due to minor shifts in a number of different projects.

Shared Cost Projects: This program includes individual capital improvement projects which typically benefit multiple lines of business (e.g., the water line of business and the drainage and wastewater line of business) and whose costs are "shared," or paid for, by more than one of SPU's utility funds. In 2011, the Water program includes funding for utility relocations associated with several transportation-driven projects (e.g., the Alaskan Way Viaduct & Seawall Replacement, First Hill Streetcar, Bridging the Gap), Heavy Equipment Purchases, and Security, Facilities and Supervisory Control and Data Acquisition (SCADA) Improvements. SCADA uses technology to centrally monitor and control the drinking water system, including flow and pressure sensors, remote control pumps, and valves.

Reductions to the **Shared Cost Projects BCL** totaling $3.8 million in 2012 and an increase of $617,000 in 2013 compared to the same years in the Adopted 2011-2016 CIP are driven by the Alaskan Way Viaduct (AWV) program and the Landsburg Facilities Development project. The proposed budget for AWV reflects the latest schedule and more refined cost estimates, which include design in 2011 for the seawall and bored tunnel portals and associated utility relocations, followed by construction in 2012. The proposed budget for the Landsburg Facilities Development project decreased by $1.7 million in 2012 due to delays in presentation of the Business Case which has affected project timing. In addition, the First Hill Streetcar project has been moved from the CIP to the Operating Budget given the Utility's capitalization guidelines.

Technology: This program category is presented in the separate "Technology CIP" section of SPU's 2012-2017 CIP. The 2012-2017 Proposed CIP reduces technology CIP spending by 10% annually, which is equivalent to a $1.37 million reduction compared to the 2012 Endorsed Budget in the 2011-2016 Adopted CIP. The Water Utility's share of the 2012 Technology CIP reduction is 52% or $709,000, based on the Water Utility's share of benefit from these projects. SPU will focus technology spending on the highest priority business needs. These include utility asset management (Maximo Upgrade/Asset Data Initiative), budget and financial management (Budget Planning and Forecasting, Financial Data Mart), customer service improvements (Web Application Redesign, online chat & contact tools), and project delivery (Enterprise Project Management System). Other technology investments will be cancelled or deferred as a result of this funding reduction, which is part of a set of initiatives intended to continue restraining costs across the utility.